WHAT IS CLAIMED IS:

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1. An exposure apparatus, comprising:

a chamber surrounding a predetermined space;

a first gas supply unit for supplying a first gas into said chamber;

a second gas supply unit for supplying a second gas, different from the first gas, into said chamber; and

a switching mechanism for supplying one of the first and second gases by switching between said first and second gas supply units.

2. A exposure apparatus according to claim 1, wherein said chamber initially contains air, and the air in said chamber is replaced with the first gas, after which the first gas in said chamber is replaced with the second gas.

3. An exposure apparatus according to claim 1, wherein said switching mechanism is a switching valve.

4. An exposure apparatus according to claim 1, wherein an amount of the first gas supplied per unit time is different from an amount of the second gas supplied per unit time.

5. An exposure apparatus according to claim 1, wherein a flow path of the first gas in said chamber is different from a flow path of the second gas in said chamber.

6. An exposure apparatus according to claim 5, wherein said chamber includes a gas supply port for the first gas and a gas supply port for the second gas, and the gas supply port for the first gas is different from the gas supply port for the second gas.

7. An exposure apparatus according to claim 5, wherein said chamber includes a gas exhaust port for the first gas and a gas exhaust port for the second gas, and the gas exhaust port for the first gas is different from the gas exhaust port for the second gas.

8. An exposure apparatus according to claim 5, wherein said chamber includes a ventilation port for the first gas and a ventilation port for the second gas, and the ventilation port for the first gas is disposed differently from the ventilation port for the second gas.

9. An exposure apparatus according to claim 1, further comprising an illumination source for emitting a light beam having a wavelength in the vacuum ultraviolet region,

wherein said chamber partly surrounds a light path of the light beam emitted by the illumination source.

10. An exposure apparatus according to claim 9, wherein said illumination source is one of an F2 laser and an Ar2 laser.

11. An exposure apparatus according to claim 1, wherein said chamber contains an optical element.

12. An exposure apparatus according to claim 11, wherein said chamber contains a plurality of optical elements.

13. An exposure apparatus according to claim 1, further comprising an illumination optical system, wherein said chamber surrounds a light path in said illumination optical system.

14. An exposure apparatus according to claim 1, further comprising an illumination optical system, wherein said chamber surrounds a light path in said projection optical system.

15. An exposure apparatus according to claim 1,

further comprising an illumination optical system, wherein said chamber surrounds said projection optical system.

16. An exposure apparatus according to claim 1, wherein the first and second gases contain substantially no oxygen.

17. An exposure apparatus according to claim 1, wherein the first and second gases have different specific gravities.

18. An exposure apparatus according to claim 1, wherein the second gas is an inactive gas.

19. An exposure apparatus according to claim 1, wherein the first gas is an inactive gas.

20. An exposure apparatus according to claim 1, wherein the second gas is helium and the first gas is nitrogen.

21. A gas replacement method, comprising the steps of:

supplying a first gas into a chamber surrounding a predetermined space; and

supplying a second gas, different from the first gas,

into the chamber after the first gas is supplied.

22. A gas replacement method according to claim 21, wherein one of the first gas and the second is supplied into the chamber by switching between a first gas supply unit for supplying the first gas and a second gas supply unit for supplying the second gas.

23. A gas replacement method according to claim 21, wherein a valve is used to switch between the first gas and the second gas.

24. A gas replacement method according to claim 21, wherein an amount of the first gas supplied per unit time of the first gas is different from an mount of the second gas supplied per unit time.

25. A gas replacement method according to claim 21, wherein a flow path of the first gas in the chamber is different from a flow path of the second gas in the chamber.

26. A gas replacement method according to claim 25, wherein a gas supply port for supplying the first gas in the chamber is different from a gas supply port for supplying the second gas in the chamber.

27. A gas replacement method according to claim 25, wherein a gas exhaust port for exhausting the first gas from the chamber is different from a gas exhaust port for exhausting the second gas from the chamber.

28. A gas replacement method according to claim 25, wherein a ventilation port for the first gas in the chamber is disposed differently from a ventilation port for the second gas in the chamber.

29. A gas replacement method according to claim 21, wherein the chamber partly surrounds a light path of a light beam emitted from an illumination source, the light beam having a wavelength in the vacuum ultraviolet region.

30. A gas replacement method according to claim 29, wherein the illumination source is one of an F2 laser and an Ar2 laser.

31. A gas replacement method according to claim 21, wherein an optical element is contained in the chamber.

32. A gas replacement method according to claim 31, wherein a plurality of the optical elements are contained in

the chamber.

33. A gas replacement method according to claim 21, wherein the chamber surrounds a light path in an illumination optical system of an exposure apparatus.

34. A gas replacement method according to claim 21, wherein the chamber surrounds a light path in a projection optical system of an exposure apparatus.

35. A gas replacement method according to claim 21, wherein the chamber surrounds a projection optical system of an exposure apparatus.

36. A gas replacement method according to claim 21, wherein the first and second gases contain substantially no oxygen.

37. A gas replacement method according to claim 21, wherein the first and second gases have different specific gravities.

38. A gas replacement method according to claim 21, wherein the second gas is an inactive gas.

39. A gas replacement method according to claim 21,

wherein the first gas is an inactive gas.

40. A gas replacement method according to claim 21, wherein the second gas is helium and the first gas is nitrogen.

41. A method of manufacturing a semiconductor device, comprising the following steps:

installing a group of manufacturing apparatuses including the exposure apparatus of claim 1, for forming various processes in a semiconductor manufacturing factory; and

manufacturing the semiconductor device through a series of the various processes using the group of manufacturing apparatuses.

42. A method of manufacturing a semiconductor device according to claim 41, further comprising the following steps:

connecting the group of manufacturing apparatuses to one another through a local area network; and

transmitting information as to at least one manufacturing apparatus the group of manufacturing apparatuses between the local area network and an external network outside of the semiconductor manufacturing factory

by means of a data communication link.

43. A method of manufacturing semiconductor devices according to claim 42, wherein maintenance information for at least one of the group of manufacturing apparatuses is obtained by accessing a database provided by a vendor or a user of the at least one manufacturing apparatus through the external network by means of the data communication link.

44. A semiconductor manufacturing factory, comprising:

a group of manufacturing apparatuses for performing various processes including the exposure apparatus of claim 1;

a local area network for connecting the group of manufacturing apparatuses to one another; and

a gateway for permitting access from said local area network to an external network outside of the semiconductor manufacturing factory,

wherein information as to at least one manufacturing apparatus of said group of manufacturing apparatuses is transmitted by means of a data communication link.

45. A method of maintaining an exposure apparatus, comprising the steps of:

providing a maintenance for exposure apparatus of

claim 1 which is database, connected to an external network of a semiconductor manufacturing factory;

permitting access to the maintenance database from the semiconductor manufacturing factory through the external network; and

transmitting information stored in the maintenance database to the semiconductor manufacturing factory through the external network.

46. An exposure apparatus according to claim 1, further comprising:

a network interface; and

a computer network, accessible via the network interface,

wherein information regarding the exposure apparatus is transmitted over the computer network by means of a data communication link.

47. An exposure apparatus according to claim 46, wherein a user or a vendor of the exposure apparatus can access a maintenance database provided by the other of the user or the vendor via an external network outside of a factory where the exposure apparatus is installed and obtain information from the maintenance database via external network.

48. An exposure apparatus, comprising:

a chamber surrounding a predetermined space;

a first gas supply source for supplying a first gas into said chamber; and

a second gas supply source for supplying a second gas, different from the first gas, into said chamber,

wherein said chamber initially has a substantial oxygen content, but after the first gas and the second as are sequentially supplied into said chamber, said chamber no longer has a substantial oxygen content.

49. The exposure apparatus of claim 48, wherein the first gas is nitrogen and the second gas is helium.

50. The exposure apparatus of claim 48, wherein the first gas is supplied into the chamber until the oxygen content in said chamber is reduced to less than abut 0.00001 percent by volume, after which the second gas is supplied into said chamber until a concentration of the first gas in said chamber is reduced to less than about ten percent by volume.

51. The exposure apparatus of claim 48, wherein the first gas is supplied into the chamber until the oxygen

content in said chamber is reduced to about 0.000001 percent by volume or less, after which the second gas is supplied into said chamber until a concentration of the first gas in said chamber is reduced to about one percent by volume or less.

52. A method of reducing the oxygen content in a chamber that initially contains air, comprising the following steps:

first supplying a first gas into the chamber to substantially replace the air in the chamber;

next supplying a second gas, different from the first gas, into the chamber to substantially replace the first gas in the chamber,

wherein after the first gas and second gas have been sequentially supplied into the chamber, the chamber no longer has a substantial oxygen content.

53. The method of claim 52, wherein the first gas is nitrogen and the second gas is helium.

54. The method of claim 52, wherein the first gas is supplied into the chamber until the oxygen content in the chamber is reduced to less than about 0.00001 percent by volume, and the second gas is supplied into the chamber

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until a concentration of the first gas in the chamber is reduced to less than about ten percent by volume.

55. The method of claim 52, wherein the first gas is supplied into the chamber until the oxygen content in the chamber is reduced to about 0.000001 percent by volume or less, and the second gas is supplied into the chamber until a concentration of the first gas in the chamber is reduced to about one percent by volume or less.